

Special Issue

Challenges and Future Trends in Renewable Energy and Grid-Connected Generation Technologies: Towards the Energy Transition

Message from the Guest Editors

This Special Issue examines the challenges and emerging trends in renewable energy and grid integration technologies by focusing on their role in the global energy transition. The scope covers technical, economic, and policy aspects of renewable energy adoption and grid modernization. Its purpose is to identify barriers, explore solutions, and analyze future trends shaping the shift towards sustainable energy systems. The topic relates to a wide range of literature, including renewable energy technology development, smart grids, energy storage, grid stability, market design, and energy policy. It builds upon THE existing research in these areas while emphasizing their interconnections and collective impact on the energy transition. This exploration is crucial given the urgency of climate action and rapid technological advancements. By synthesizing insights from various fields, it aims to provide a comprehensive understanding of the challenges and opportunities in transitioning to a renewable-dominated energy system, offering valuable insights for policymakers, industry stakeholders, and researchers.

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